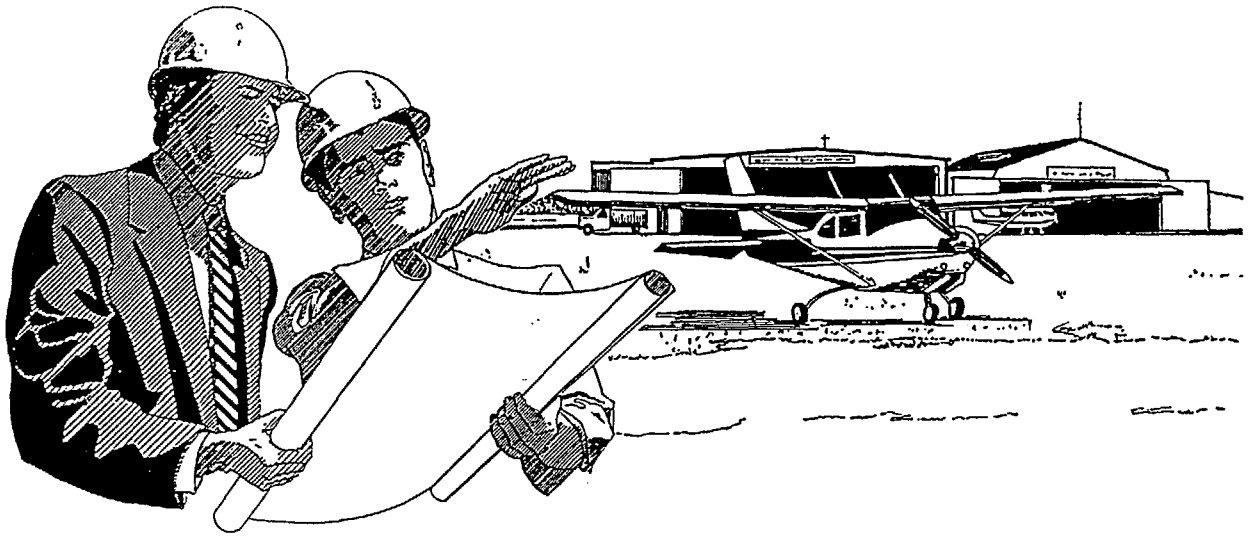
Chapter Four
AIRPORT DEVELOPMENT ALTERNATIVES

H.A. Clark Memorial Field



Chapter Four
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The primary goal of the Airport Master Plan is to develop a viable yet flexible development concept for accommodating the anticipated aviation demand for the 20-year planning period. To this end, potential development alternatives are created which, to the extent possible, provide those facilities and capabilities needed to accommodate forecast aviation demand.

It is also important to avoid development concepts that would preclude expansion beyond the 20-year planning period, or that would require expansion commitments prior to certainty of need. In the development and evaluation of alternatives, two key considerations are the alternative's ability to provide the needed facilities and its ability to maintain flexibility in future development.

In addition to general aviation facilities, the airport development concepts for H.A. Clark Memorial Field should allow for, at a minimum, commercial service facilities, aviation related development, and on-airport land uses that could provide revenue support to the airport.

The following sections summarize the airside and landside concepts for the three airport alternatives developed for H.A. Clark Memorial Field. Each alternative provides for both airside and landside improvements for the airport, including those needed to accommodate general aviation activities as well as the planned commercial service specialty use of Biegert Aviation's Classic Air. Each concept is intended to represent all of the development for the 20-year planning period, with no reference to the timing or phasing of each development item.

POTENTIAL COMMERCIAL SERVICE

Chapters Two and Three outline the plans of Biegert Aviation for the establishment of a commercial service specialty use at H.A. Clark Memorial Field. Accommodation of this planned operation would require several improvements above and beyond those needed to serve general aviation aircraft, including the widening of the runway and taxiway system, the strengthening of runway, taxiway and apron pavement, and the construction of a terminal building and associated aircraft apron and automobile parking facilities. Table 4A outlines the key differences between general aviation facility requirements at H.A. Clark Memorial Field and those of commercial service operations such as Classic Air.

TABLE 4A
Comparison of Facility Requirements
General Aviation Versus Commercial Service
H.A. Clark Memorial Field

Facilities	General Aviation Requirements	Commercial Service Specialty Use Requirements
Runway Length (ft.)	8,000	8,000
Runway Width (ft.)	75	100
Pavement Strength (lbs)	12,500 SWL	80,000 DWL
Taxiway Width (ft.)	35	50
Commercial Service Landside Facilities* (acres)	None	10

NOTES: SWL = Single Wheel Loading
DWL = Dual Wheel Loading
* Includes commercial service terminal building and associated aircraft apron, access improvements and automobile parking facilities.

If Biegert Aviation decides not to pursue their plans for Classic Air at the airport and no other commercial service operation is proposed in the short term, the need for commercial service facilities may be delayed and only those facilities and capabilities needed to serve general aviation traffic would be developed. Reserving land for commercial service activity would, however, allow for development of these uses in the future, and would prevent the inadvertent development of other uses in areas prime for this commercial service use.

For this reason, each of the alternatives identified in this chapter reserves space for commercial service facilities including the associated apron, terminal building, and automobile parking lot. In this way, commercial service facilities can be accommodated as needed or warranted throughout the planning period.

AIRSIDE CONCEPTS

Airside facilities are by nature the focal point of the airport complex. Because of

physically dominate airport land use, airside requirements are the most critical input to the identification of reasonable alternatives. With regard to airside facilities and capabilities, all three alternatives are identical, each providing the improvements recommended in Chapter Four, Facility Requirements.

Consistent with the recommendations of Chapter Three, Facility Requirements, all three alternatives plan for the closure of Runway 02-20.

To accommodate 100 percent of small aircraft under 12,500 pounds, the runway length would need to be at least 7,980 feet. Preliminary calculations for the performance characteristics of the DC-4 aircraft at this density altitude indicate a need for approximately the same runway length, or 8,000 feet. Each of the three alternatives depicts Runway 18-36 at 8,000 feet.

Consideration was given to whether the runway should be extended to the north, the south, or both. Due to the location of an underground gas line corridor at the south end of the existing runway, the location of Three-mile Lake off the south end of the airport, and a hill south of the airport that would likely serve as an obstruction to the airport's southern approach, any extension to the south was considered to be impractical. For these reasons, each of the three alternatives proposes the 2,000-foot extension to the north.

All three alternatives plan for the widening of Runway 18-36, from 60 to 100 feet, allowing the airport to accommodate DC-4 aircraft on a regular basis. As indicated in Table 4A, to serve only general aviation traffic, the runway would need to be widened only to 75 feet.

With regard to runway pavement strength, each alternative includes upgrading the runway and taxiway strength to 80,000 pounds dual wheel loading (DWL). This pavement strength would be adequate to accommodate DC-4 aircraft on a regular basis. The existing pavement strength would be adequate to serve general aviation aircraft only.

Each of the three alternatives plans for the development of a full parallel taxiway and connecting taxiways to improve airfield capacity and operating efficiency. Consistent with the runway, taxiways would also be constructed at 80,000 pounds DWL. The alternative development concepts depict the taxiways at 50 feet in width, the width necessary for DC-4 aircraft to operate in and out of the airport. Without commercial service, taxiways could be constructed at 35 feet.

As recommended in Chapter Three, non-precision instrument approaches are planned for both runway ends. Exhibits depict the additional property required for the runway extension and the upgrade from visual to non-precision approaches. Approximately 60 acres to the north of the runway and approximately 37 acres to the south of the runway would need to be acquired. The three concepts also include the installation of runway end identifier lights (REILs) and Precision Approach Path Indicators (PAPIs).

LANDSIDE CONCEPTS

While the location and overall acreages vary somewhat for landside development between the three alternatives, with a few exceptions, the basic facilities incorporated are the same. Each alternative reserves land for general aviation facilities, a fixed

base operator (FBO), fuel storage, commercial service facilities, aviation related development, and airport revenue support. In each alternative, additional acreage is reserved for future expansion of facilities beyond that needed within the 20-year planning period.

In addition, due to the recreational diversity of Williams, Arizona, the City of Williams has expressed interest in providing space for the development of basic camping facilities for fly-in visitors to H.A. Clark Memorial Field. Such a facility would likely include tent camping spaces directly adjacent to aircraft tiedown positions. Other facilities could be added, such as picnic tables, trash receptacles, shade ramadas, campfire pits and informational kiosks.

The concept of providing basic camping facilities at airports in rural parts of Arizona that provide access to areas of high recreational potential, was originated by the Arizona Department of Transportation Aeronautics Division with the development of a statewide recreational airport system. As part of their study, the State identified 12 existing airports and four proposed airports in rural areas of the state that were considered to provide the best opportunities for fly-in recreational activities. The recreational activities considered included camping, fishing, hunting, boating, hiking and/or cultural activities. The purpose of the study was to provide a mechanism to fund the development of aviation camping facilities at a system of Arizona airports. While H.A. Clark Memorial Field was not selected to be part of this initial recreational airport system, providing basic camping facilities could enhance the airport's ability to attract tourist activity to the region.

AIRPORT DEVELOPMENT ALTERNATIVES

The following discussion and corresponding exhibits, outline the basic concepts and differences between the three development alternatives developed for H.A. Clark Memorial Field. **Exhibits 4A, 4B and 4C** depict both the airside and landside improvements recommended with each alternative.

AIRPORT DEVELOPMENT ALTERNATIVE A

As recommended in **Chapter 3.0, Facility Requirements**, Airside Alternative A provides for redevelopment and expansion of the existing general aviation apron and hangar facilities. With the closure of Runway 02-20, the general aviation apron would be designed and constructed parallel to Runway 18-36, a much more efficient layout for aircraft storage and movement. Adjacent to and on the west side of the general aviation apron, space has been reserved for the development of an FBO facility. This area can accommodate such facilities as a conventional hangar, office space, restrooms and a pilot lounge.

Directly north of the general aviation redevelopment area, additional acreage has been reserved for future general aviation related facilities, beyond those identified for the 20-year planning period.

For each of the three alternatives, the commercial service area has been located south of the general aviation area. This location would provide convenient access to both the runway and taxiway system and the ground transportation network, and would allow for a separation of general aviation and commercial activities. With each alternative, approximately seven acres

of land would need to be acquired to facilitate the development of commercial service facilities and to provide future expansion capabilities. The airport development alternatives identify land for future expansion to either side of the initial development area, as well as, land for the development of a commercial service maintenance facility.

Aviation related development includes those land uses that would require direct access to the runway and taxiway system. Aviation related development area is designed to serve businesses or industries that use aircraft in their company operations. Examples of these uses include corporate hangars, aircraft refurbishing, and aircraft retrofitting operations. Since the amount of land that can be practically provided with taxiway access is limited, land uses not requiring taxiway access should not be permitted in these areas. Alternative A identifies two areas for aviation related development: one immediately adjacent to and east of the general aviation apron and one immediately adjacent to the parallel taxiway, on the north end of the airport.

Areas designated for airport revenue support would be for the development of uses, that while they may benefit from locating close to the airport, do not require direct access to the runway system, and as such, can be physically removed from the taxiway system. Industrial parks are common examples of airport revenue support. Land uses that could provide airport revenue support are reserved on Alternative A, east of the existing alignment of Forest Road 16.

Each alternative reserves an area for the storage of aircraft fuel. The area has been designed to be large enough to easily accommodate both the general aviation and commercial service fuel needs of H.A. Clark Memorial Field. In each case, this area is located between the general aviation apron and the commercial service terminal area, and provides easy access for fuel delivery from the airport entry road. The area identified on each alternative is large enough to accommodate future storage needs beyond those identified for the 20-year planning period.

A triangular-shaped area, which currently houses the airport beacon and an equipment storage building, has been reserved on each alternative for a utility corridor. This area will also house the fire protection delivery system currently being designed, which will be operated from a 250,000 gallon water storage tank.

Airport Development Alternative A reserves space for basic camping facilities for fly-in visitors to H.A. Clark Memorial Field. An aviation camping area has been set aside on this alternative at the northeast corner of the existing airport property.

Landside Development Alternative A, including the recommended airside alternative is depicted on **Exhibit 4A.**

AIRPORT DEVELOPMENT ALTERNATIVE B

As proposed with Alternative A, Alternative B provides for the redevelopment and expansion of the existing general aviation apron and hangar facilities. While the apron area would be located in the same location and orientation as Alternative A, the FBO area for Alternative B would be located on the east side of the general aviation apron, rather than the west side. The location of the FBO in this area would require the construction of a new access road to serve the area, but would provide

an added flexibility in the layout of the general aviation apron.

As with Alternative A, additional acreage has been reserved for future general aviation expansion. With Alternative B, however, the future expansion area would be directly east of the redeveloped and expanded general aviation apron, rather than to the north along the parallel taxiway.

The development of the commercial service terminal facilities with Alternative B would be identical to that of Alternative A, located south of the general aviation area, with convenient access to both the runway and taxiway system and the ground transportation network. As with Alternative A, approximately seven acres of land would need to be acquired to facilitate the development of commercial service facilities and to provide future expansion capabilities. Alternative B also reserves land for the development of a commercial service maintenance facility.

Alternative B reserves land for aviation related development north of the general aviation apron, adjacent to the parallel taxiway. Ground access would be provided to this area on the eastern edge of the airport property.

As with Alternative A, land uses that could provide airport revenue support are reserved on Alternative B (east of the existing alignment of Forest Road 16), a utility corridor has been established in the vicinity of the existing airport beacon, and fuel storage would be located between the general aviation apron and the commercial service terminal area. Unlike Alternative A, Alternative B does not reserve an area for the recreational use of aviation camping.

Landside Alternative B is depicted on **Exhibit 4B** along with the recommended airside alternative.

AIRPORT DEVELOPMENT ALTERNATIVE C

With many identical elements to Alternative A, Alternative C's most notable difference would be the acquisition of an additional 59 acres adjacent to the existing property to develop an industrial or business park for airport revenue support.

As proposed with Airport Development Alternatives A and B, Alternative C provides for the redevelopment and expansion of the existing general aviation apron and hangar facilities. The FBO area for Alternative C would be located on the west side of the general aviation apron as depicted on Alternative A.

As with Alternatives A and B, additional acreage has been reserved for future general aviation expansion. With Alternative C, the future expansion area would be directly east of the expanded general aviation apron as with Alternative A.

As previously mentioned, the development of the commercial service terminal facilities with Alternative C would be identical to that of Alternatives A and B, located south of the general aviation area, with convenient access to both the runway and taxiway system and the ground transportation network. As with Alternatives A and B, approximately seven acres of land would need to be acquired to facilitate the development of commercial service facilities and to provide future expansion capabilities. Alternative C reserves land for the development of a commercial service

maintenance facility as do Alternatives A and B.

Alternative C, identifies two areas for aviation related development: one immediately adjacent to and east of the general aviation apron and one immediately adjacent to the parallel taxiway, on the north end of the airport. Ground access would be provided to this area on the eastern edge of the airport property.

As with the other alternatives, a utility corridor has been established in the vicinity of the existing airport beacon, and fuel storage would be located between the general aviation apron and the commercial service terminal area. Similar to Alternative A, Alternative C reserves land for the recreational use of aviation camping.

Landside Alternative C is depicted on **Exhibit 4C** along with the recommended airside alternative.

COST COMPARISON

Rough development costs have been developed to aid in the evaluation of airport alternatives. These cost estimates reflect general, order of magnitude costs for major development items and should be used for comparison purposes only. **Table 4B** depicts the costs associated with both general aviation and commercial service airside and landside improvements, listed separately by key development actions. Because airside improvements would be identical for all alternatives, the costs associated with this development are expected to be the same from one alternative to the next. With regard to landside improvements, differences between alternatives is limited, and is primarily associated with the increased acreage of revenue support to be developed with Alternative C.

Cost estimates include rough grading and site preparation only for the aviation related and airport revenue support areas identified. They do not include estimates for land acquisition, nor for the development of future expansion areas beyond those needed for the 20-year planning period.

The total cost for Airport Development Alternative A was estimated at $19.9 million, the total cost of Alternative B was estimated at $20.0 million, and Alternative C, the most costly alternative, was estimated at $21.8 million dollars.

SUMMARY

Each of the three alternatives developed for H.A. Clark Memorial Field can easily accommodate the airside and landside facilities needed for the 20-year planning period and can effectively provide areas for future expansion beyond this period. Due to the similarity of Alternatives A and B, the costs associated with these two alternatives are comparable, and less than those of Alternative C. Alternative C would be the most costly to develop, due to the costs associated with site preparation and access road construction associated with an expanded area for airport revenue support. Potential environmental impacts are expected to be virtually the same for each of the three alternatives developed.

Based on input received from members of the Planning Advisory Committee and representatives of the City of Williams, a fourth concept was developed and refined for H.A. Clark Memorial Field. While this new concept is most similar to Alternative

C, it incorporates elements of the other alternatives as well as new ideas generated in the Planning Advisory Committee meeting.

The new concept, which is presented in detail in **Chapter Five, Airport Plans,** incorporated the following key changes.

- On the approach end of Runway 36, the end taxiway was modified to avoid interference with the underground gas line corridor.

- The FBO location was moved in order to maintain depth of the ramp area, critical to future development opportunities and flexibility. The existing Forest Road 16 would provide automobile access to this site in the short-term.

- The proposed relocation of Forest Road 16 was modified to pass through the planned industrial park, rather than to reroute along the park's perimeter. This change would shorten the length of road to be constructed, while at the same time, provide primary access to this development area.

- The industrial park area was reduced in size by eliminating that portion south of the underground gas line corridor.

- The size and location of the recreational camping area was modified. The new location was selected to be closer to Three Mile Lake, other recreational amenities and airport landside facilities.

TABLE 4B
Airport Development Cost Comparison
H.A. Clark Memorial Field

Item	Alternative A	Alternative B	Alternative C
General Aviation Airside Development			
Runway Extension	$584,000	$584,000	$584,000
Taxiway Construction	1,416,000	1,416,000	1,416,000
Runway Lighting	140,000	140,000	140,000
Taxiway Lighting	728,000	728,000	728,000
PAPIs	60,000	60,000	60,000
REILs	30,000	30,000	30,000
Runway/Taxiway Markings	30,000	30,000	30,000
Subtotal General Aviation Airside	**$2,988,000**	**$2,988,000**	**$2,988,000**
General Aviation Landside Development			
Site Preparation	$2,135,000	$2,152,000	$3,345,000
Access Roads	386,000	445,000	664,000
Auto Parking	193,000	193,000	193,000
General Aviation Apron	1,666,000	1,666,000	1,666,000
Tiedowns	8,000	8,000	8,000
T-Hangars	360,000	360,000	360,000
Fuel Storage Facility	300,000	300,000	300,000
Subtotal General Aviation Landside	**$5,048,000**	**$5,124,000**	**$6,536,000**
Commercial Service Airside Development			
Runway Widening	$1,450,000	$1,450,000	$1,450,000
Runway Overlay	2,000,000	2,000,000	2,000,000
Taxiway Widening	1,127,000	1,127,000	1,127,000
Taxiway Overlay	1,214,000	1,214,000	1,214,000
Subtotal Commercial Service Airside	**$5,791,000**	**$5,791,000**	**$5,791,000**
Commercial Service Landside Development			
Commercial Service Terminal	$570,000	$570,000	$570,000
Commercial Service Apron	1,523,000	1,523,000	1,523,000
Subtotal Commercial Service Landside	**$2,093,000**	**$2,093,000**	**$2,093,000**
Engineering and Contingencies	3,980,000	3,999,000	4,352,000
TOTAL AIRPORT DEVELOPMENT	**$19,900,000**	**$19,995,000**	**$21,760,000**

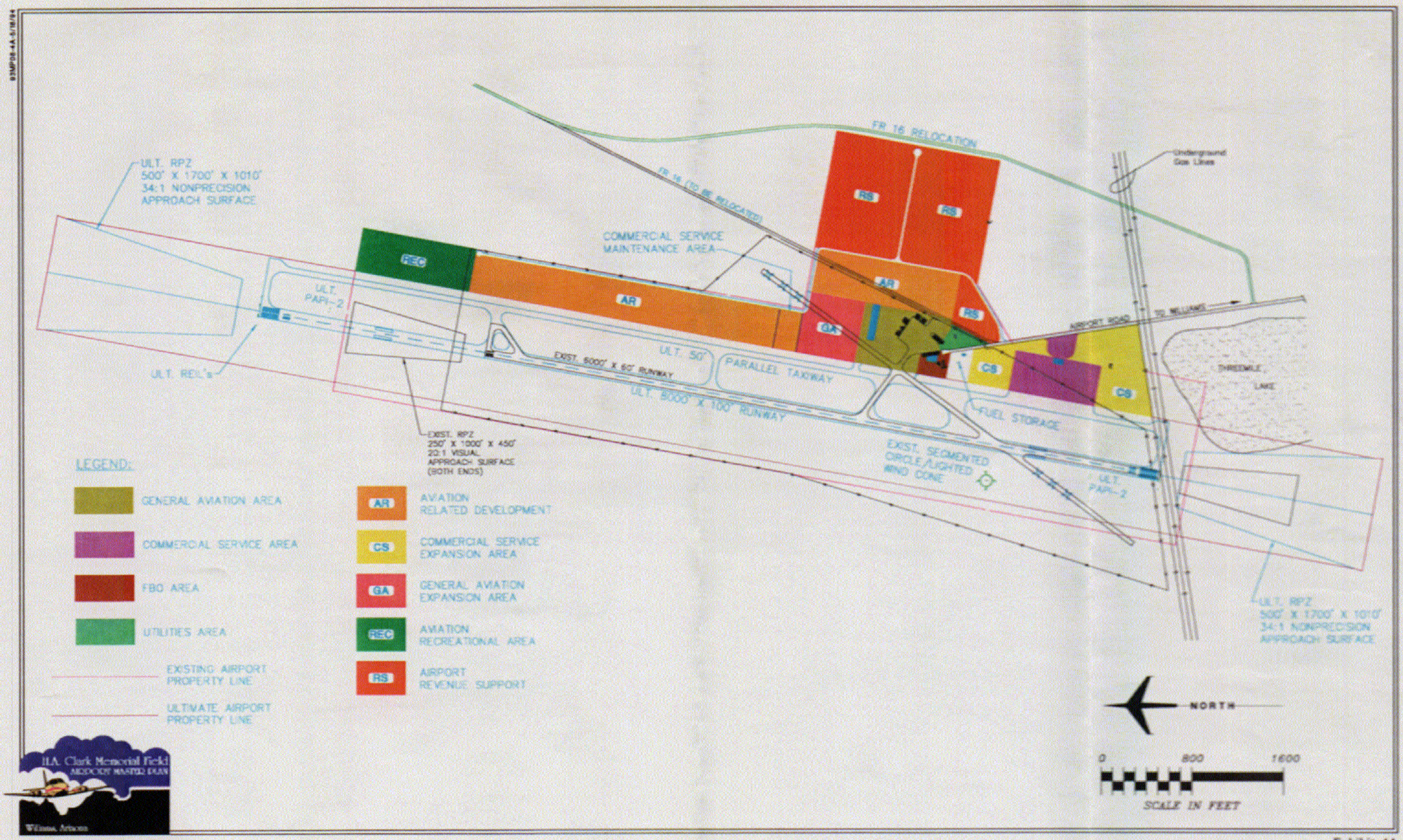

Exhibit 4A
AIRPORT DEVELOPMENT ALTERNATIVE A

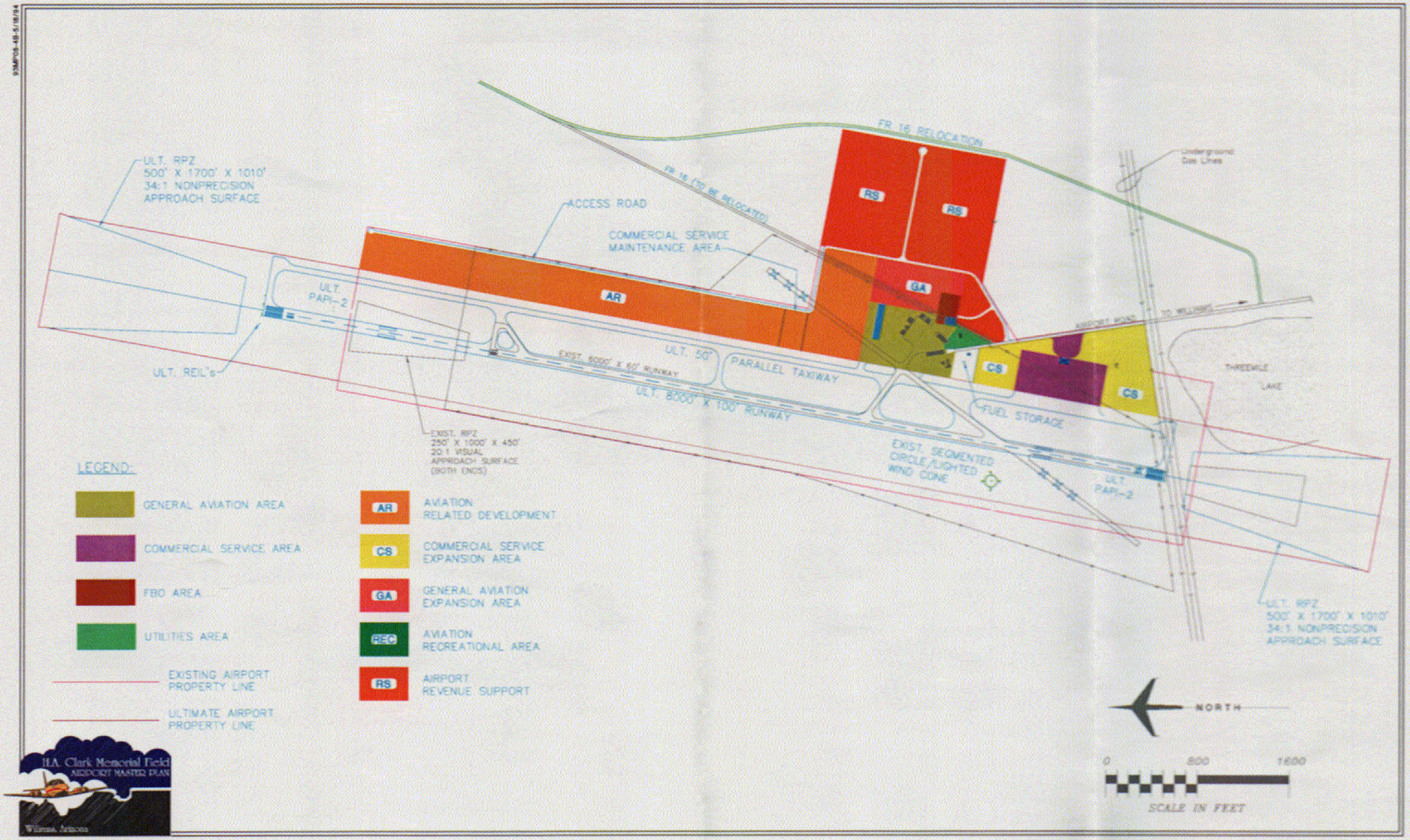

Exhibit 4B
AIRPORT DEVELOPMENT ALTERNATIVE B

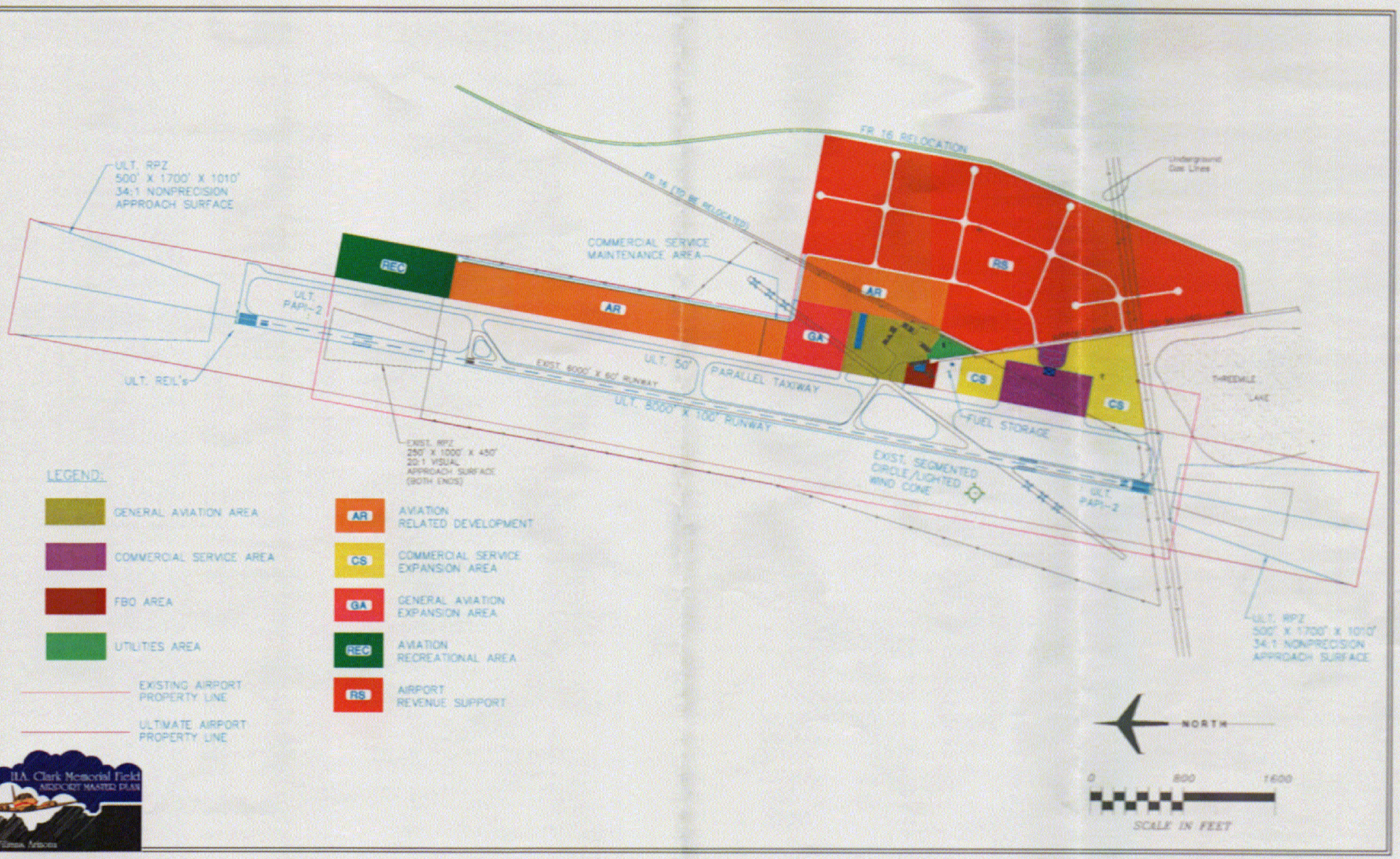

Exhibit 4C
AIRPORT DEVELOPMENT ALTERNATIVE C